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## ABSTRACT

This case study examines the process of learning to read and write in a first-grade boy for whom difficulties in literacy acquisition were predicted from a battery of tests commonly used to identify learning disabilities (LD). Data included: (1) test scores from the school psychologist, speech therapist, audiologist, and from standardized school tests; (2) samples of school reading and writing tasks; (3) samples of writing and reading attempts done outside of school; (4) samples of talk about reading and writing and the nature of written language by the child; and (5) observation of developing school instruction. Results indicated no relationship between the test results and the child's processes and success in learning to read and write. The paper discusses the limited view of literacy acquisition reflected in the LD test battery as contributing to its inability to predict success for this child and suggests an approach to diagnosis which accounts for prior experience with written language. (Author/DB)

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CAN EARLY READING ACHIEVEMENT BE PREDICTED WITH TRADITIONAL  
LEARNING DISABILITIES TESTS? A CASE STUDY

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Running Head: Early Reading and LD Tests

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#### ABSTRACT

This case study examines the learning to read and write processes of a first-grade boy for whom difficulties in literacy acquisition were predicted from tests. Commonly used LD battery tests such as the WISC-R and The Bender Visual-Motor Gestalt identified significant problems indicative of organic brain dysfunction in this child. In the light of these predictions, the boy's processes and progress in reading and writing were tracked during his first-grade year. Data included (a) test scores from psychologist, speech therapist, audiologist, and standardized school tests; (b) samples of school reading and writing tasks; (c) samples of writing and reading attempts done outside of school; (d) samples of talk about reading and writing and the nature of written language by the child; and (e) observation and tracking of school instruction. Results indicate that no relationship existed between the test results and the child's processes and success at learning to read and write. The author discusses the limited view of literacy acquisition reflected in the LD test battery as contributing to their inability to predict success for this child and suggests an approach to diagnosis which accounts for experience with written language.

This case study examined the learning-to-read process for a first-grade boy who had been diagnosed as potentially learning disabled and for whom difficulty with learning to read had been predicted. The purpose of the study was to search for theoretical and practical relationships between the variables tested on a variety of commonly used LD tests, the interpretations of the results of these tests, and the actual processes of learning to read and write exhibited by the child.

#### Theoretical Background

This study grows out of two theoretically different approaches to predicting early reading/writing achievement. On the one hand are the traditional tests for learning disabilities, and the call for increased screening for potential LD problems with preschool children (Position Paper of the National Joint Committee on Learning Disabilities, 1986). On the other hand is the implication from the research on emergent literacy (Harste, Burke, & Woodward, 1984; Holdaway, 1979; Purcell-Gates, 1986 & 1988; Sulzby, 1985; Teale & Sulzby, 1986) that it is the extent of experience with written language which is the operative factor in predicting success at learning to read and write rather than neurological deficits.

Although many researchers in the field of learning disabilities are beginning to refute the traditional interpretations of test results considered in this report (Kaufman & Reynolds, 1985), the fact remains that a common battery of tests for LD are still widely used in school and

clinical practice. Traditional interpretations of the results of these tests are employed for the identification of "children at risk." Of this battery, the two tests considered in this report, the Weschler Intelligence Scale for Children - Revised and the Bender Visual-Motor Gestalt Test, are the assessment devices most frequently chosen by professionals for making decisions about LD placement (Ysseldyke, Algozzine, Richey, & Graden, 1982). The battery of LD tests for identification purposes reflect a particular view of reading and writing. This view sees the processes of reading and writing resulting from various neurological processings considered relevant to the reception or production of written language. Thus, such factors as visual preception (Frostig & Maslow, 1969), visual memory (Benton, 1963), visual-motor integration (Bender, 1938), auditory memory (Baker & Leland, 1935), auditory blending (Roswell & Chall, 1963), and sensory-motor integration (Ayers, 1968; Kephart, 1964) are seen as the operative factors in learning to read and write. Children exhibiting difficulty with learning to read and write, and whose difficulties cannot be explained by such things as cultural deprivation, physical handicaps, or low intelligence, are suspected of having organic neurological difficulties (Coles, 1978).

Tests such as those considered in this manuscript are commonly used to assess the possibility of such difficulties. If the results of these tests fall into familiar patterns then the child is assumed to be learning disabled which explains his

problems with learning to read and write. Instructional programs designed to teach this child are then proposed which reflect this emphasis on the aforementioned neurological processing requirements of reading and writing. Furthermore, and relevant to the current discussion, many of the same tests and interpretations of results are used with children whom professionals suspect may have problems in school--so-called "at risk" children. Thus, performance on tests of factors such as visual perception, visual memory, visual-motor integration, auditory memory, and sensory-motor integration are being used for predictive purposes with young children.

#### Emergent Literacy Research

However, another approach to the prediction of early literacy achievement is implied in the growing body of research into literacy development in young children. This research field looks at what children learn about reading and writing before the onset of formal instruction and during the first few years of schooling.

Research has documented that young children growing up in a literate environment learn about written language through their experiences with it. This knowledge can be described as accruing at three levels, each constraining and defining the next (Purcell-Gates, 1986). The broadest and most constraining level of written-language knowledge is that of the cultural view of literacy and the functions served by written language within a particular sociolinguistic culture. This constrains what young

children learn on the second level: the natures and forms of written language. For example, if written language is used for personal communication between friends in a given culture, the children in that culture become familiar with the degree of language decontextualization and the semantic and syntactic forms of personal letters. As they learn about the natures and forms of written language deemed functional within their particular language cultures, young children also learn about the symbol system of written language and its relation to speech and meaning -- the third, inner, level of written-language knowledge. Harste, Burke, and Woodward (1984) point out that the experiences children engage in with written language at these different levels determines the extent of their knowledge.

From this perspective, tests such as the Frostig Developmental Test of Visual Perception (1964), the Bender Visual-Motor Gestalt (1938), and the Illinois Test of Psycholinguistic Abilities (Kirk, McCarthy, & Kirk, 1968), commonly used by LD professionals, would appear limited at best in their abilities to predict future success with literacy acquisition since they take an experience-free approach to assessment and the resulting diagnosis.

For this study, a first-grade boy was intensively studied for a year as he learned to read and write. He was chosen for study because it was predicted by formal diagnostic tests that he would find it difficult to learn to read and write due to various processing deficits. For the study period, his actual processes

of learning to read and write were examined with the test results and interpretations in mind but from an emergent literacy perspective. The goal of the study was to ascertain if any relationship existed between the test results and interpretations and his actual processes of literacy acquisition. In other words, would he exhibit difficulties beyond those experienced by most beginning readers and writers which could be directly related to the deficits identified by the tests he had been given.

#### METHOD

##### Subject

The subject of this case study is my son, Michael, who was almost seven years old when data collection began. At this time, Michael was about to enter first grade, and a number of professionals were concerned about his future success. This concern was based on evaluation of his performance at several different levels: (a) observations and reports from his kindergarten teachers and (b) scores on the Wisc-R and the Bender Gestalt Visual-Motor Test.

Michael was a boy who was notably anxious about many things. This conclusion is based on my systematic observation of him during his preschool years through both parental and emergent literacy lenses. In addition to an above-normal fear of swimming pools, the dark, and large dogs, he was particularly anxious about his seeming inability to measure up to a gifted--

academically and artistically -- older sister (Levin, 1982). This performance anxiety led, in my opinion to which a consulting psychiatrist agreed, to an avoidance of several crucial experiences during his preschool years. For example, Michael refused to play with blocks after he tried and failed to build intricate block castles like those of his sister. He failed to draw beautiful pictures and refused to draw again. He tried to write his name like his sister did, failed, and resisted thereafter to pick up a pencil or marker. Between the ages of 2 and 5, Michael avoided experiences with such items as puzzles, legos, play-doh, and paper and pencil.

At the beginning of this study, Michael had completed a year of kindergarten at an open alternative school where there was much journal writing and sharing of stories. It was a noisy, active place with many things happening at once, and Michael experienced many problems there. According to regular reports from his teachers, he became argumentative, hostile, and aggressive at the school. Aides at the school reported that in addition to this negative behavior, Michael often appeared confused and uncertain about what he was expected to do, where he was supposed to go, and when. By the end of the year, Michael reported that he "hated" school and did not wish to return. His teachers all expressed concern over his behavior and lack of academic progress.

Michael began first grade in a different school. I transferred him from the alternative school to the neighborhood

school for several reasons. I was becoming convinced that Michael would function more successfully in a more structured environment. It was clear that he was not succeeding in the open school. Also, my suspicion that Michael was having difficulty with auditory processing was increasing. Many times he needed us to repeat what we had said to him. At one point during his kindergarten year, I had his hearing tested but he showed no acuity loss.

This suspicion was confirmed the following January by an audiologist at Children's Hospital (Mikulich, 1984). Michael showed a central auditory processing deficit in situations where with competing messages and background noise. He showed a 90 percent loss of comprehension through his left ear under these conditions. His growing anxiety and confusion at the noisy, active alternative school the previous year began to make more sense.

#### Data Collection

As observer and collector of data, I reflect a confluence of the two disciplines of learning disabilities and emergent literacy. For many years, I taught reading and writing to learning disabled and remedial seventh and eighth graders. The research and writings of Goodman (1972), Smith (1979), and others broadened my perspective of the reading process during those years to one which views reading as a language process -- a process using language cueing systems synergistically to

comprehend written language. My particular research interest is literacy development in young children -- both as they develop the roots of literacy in different real-life experiences before they begin formal instruction and as they encounter formal instruction in school. The theoretical perspective reflected in this study is that children construct their own knowledge through social transactions with people and events in their lives.

Data for this report was collected for one year from the August preceding Michael's first-grade year to the following August. The data consist of (a) test summaries and/or scores from psychologist, speech therapist, audiologist, and standardized achievement tests; (b) samples of school reading and writing tasks; (c) samples of writing and reading attempts done outside of school; and (d) comments made by Michael to me or others relating to reading and writing, which were recorded no more than 30 minutes after they occurred. Reading and writing instruction in school was accounted for by (a) examination and analysis of the scope and sequence of the reading instruction as reflected in the Teacher's Manual and accompanying student materials; (b) regular meetings with the teacher to clear my analysis of the instruction with her; and (c) five classroom observations of the reading and writing instruction, spaced approximately one and one-half months apart. Michael was never aware of my collection of these data. I was far from a disinterested observer, though. I played both direct and indirect roles in his learning to read and write as is apparent

in this report.

## RESULTS

### Test Results Indicating Problems

Michael first visited a child psychiatrist during the summer between his kindergarten and first-grade year. In addition to beginning a program of psychotherapy designed to reduce Michael's anxiety and improve his self-image, the psychiatrist referred him to a consulting psychologist for a series of psychoeducational tests to determine any underlying reasons for his problems in school.

The test results, as interpreted by the psychologist, indicated potential problems. Michael's psychiatrist, to whom the test results were sent, declined to release specific scores for the purposes of this article, citing patient/therapist confidentiality. He did, however, release the psychologist's analysis of the scores for those tests which pertained to cognitive/academic functioning. These will be presented.

### Cognitive Functioning

#### Wechsler Intelligence Scale for Children--Revised (WISC-R)

The consulting psychologist reported that Michael's Full-Scale IQ score placed him in the average range of intellectual functioning, a score significantly depressed by a 22-point gap between the Verbal score and the Performance score, with the verbal being the higher of the two. She went on to state:

Michael demonstrates above-average alertness, curiosity, receptivity to mental stimulation, memory for facts, and

motivation to learn. He is aware of prevailing social norms and values, and he has the ability to evaluate past experience and apply it to everyday life. Michael's reasoning ability is well-developed and mature. He can visually analyze and synthesize abstract geometric designs. Michael can reliably distinguish significant from insignificant details, and he can see interrelationships between major elements of a problem and between the parts and the whole. (Garfinkle, 1983).

#### Organic Evaluation

The psychologist's Organic Evaluation, though, suggested difficulties commonly found in LD populations.

#### WISC-R

Michael's Verbal IQ Score is 22 points higher than his Performance IQ Score. This is generally regarded as a significant difference and is usually interpreted to be suggestive of some degree of organic brain dysfunction and/or learning disability. Specifically Michael showed noticeable difficulty with orientation in space, spatial memory, and spatial planning. Visual-motor coordination and dexterity were considerably below his overall average to high-average verbal performance. Difficulty memorizing and copying paired symbols on the Coding subtest may be predictive of difficulties in beginning reading (Garfinkle, 1983).

This psychologist orally expressed a great deal of concern

over Michael's prospects for learning to read and write. She felt that he would find it difficult and would fall further and further behind as school work increased in difficulty (Levin, 1983).

#### Benton Visual Retention Test and Bender Gestalt Test

Although Michael's scores on the Benton Visual Retention Test were within normal limits, his performance on the Bender Gestalt Test suggests a visual-motor developmental lag of one to one and a half years. According to the Koppitz scoring system, Michael's Bender score of 11 errors would be considered normal for a child of approximately age 5 1/2. The importance of this developmental lag is emphasized by the presence of several errors which are thought to be significant indicators of organic brain dysfunction in the performance of a child of Michael's age (i.e., copying misshapen angles, substituting angles for curves, loss of integration and shape of design, omissions, and substitution of lines for dots).

Thus Michael entered first grade with indications (from kindergarten) and predictions (from the tests) of impending problems with learning to read. However, missing from this diagnostic/predictive package is Michael's history of experiences with written language -- aspects of literacy acquisition recently highlighted by research into literacy development in young children, or emergent literacy.

## Emergent Literacy Predictors

Looking at Michael in the light of the research on emergent literacy presents an interesting picture. The literature describes children observing and taking part in literacy events which are part of their everyday lives during the years prior to formal schooling (Dyson, 1982; Ferriero & Teberosky, 1982; Harste, Burke, & Woodward, 1984; Holdaway, 1979; Taylor, 1983). A child from a home such as Michael's would be surrounded with print -- as Michael was. According to the literature, these children begin to join this literate world with their own interpretations of literacy tasks and attempts to participate in them (Purcell-Gates, 1986). They begin to scribble, draw, and write for various purposes. They begin reading attempts as they read the environmental print surrounding them (Goodman & Altwerger, 1981), reread favorite storybooks (Sulzby, 1985), and so on.

Interestingly, Michael fit only part of this picture. He loved to be read to and requested it often. He was also aware of the different functions of print, often insisting, for example, that I write down items to be remembered. But aside from one wobbly "M" on the wall outside his room in green crayon, I observed no attempts by him to experiment with print.

The preschool he attended for two years valued self-direction and self-selection of activities, with the emphasis on social development. There was no directed instruction related to readiness for reading and writing such as learning the names and

sounds of the letters. Language experience/dictating activities were available but Michael never chose to engage in them. He did choose to listen to stories daily, though. An examination of all artifacts brought home by him from preschool revealed no scribbling or writing attempts -- his name labelling the products was always teacher-written-- and only a few attempts at painting. I suggest, and will explain in greater detail later, that it is this lack of experience with the "innerworkings" of print (as Dyson, 1982, calls the nature of the print/speech match) that contributed to his poor showing on many of the subtests mentioned earlier and not an organic problem with "codes."

So the question when he began first grade in a very structured basal program was, "Would he learn to read without undue difficulty or would his learning process be affected by the weaknesses recorded on the various tests which had been administered?"

#### Observational Results

Observation of Michael's process of learning to read and write in first grade revealed no apparent effects of underlying neurological dysfunctions. These observations consisted of (a) samples of school reading and writing tasks; (b) examination and analysis of the scope and sequence of school reading instruction as reflected in the Teacher's Manual and student materials for the basal program employed; (c) regular meetings with the teacher to clear my analysis of the instruction; (d) five classroom

visits for observation of the literacy instruction; (e) samples of writing and reading attempts done outside of school; and (f) comments made by Michael to me or others relating to reading and writing.

These data were listed and studied for common themes and categories. Observations were then coded and recoded as patterns emerged indicating a process of literacy acquisition employed by this child.

Analysis of this data revealed a child moving toward full literacy on several fronts and assimilating the often narrow, specific knowledge he gained in school with information about written language he already possessed and with new information he gained on his own through questions and inferences. I will first present a developmental description of Michael's acquisition of literacy and then discuss the following: (a) the relationship between the variables tested on the LD tests and his actual process of literacy acquisition; (b) insights into the relationship between school instruction and outside of school construction of knowledge; and (c) the role of parent teaching/coaching in children's school success.

#### Progress and Processes of Literacy Acquisition

Placed in the lowest reading group, Michael began first grade systematically working his way through the preprimer books of the Houghton-Mifflin (1983) series. His attitude toward school and his general demeanor, though, soon signaled a change from Kindergarten. He seemed more relaxed and confident about

school, a conclusion also supported by teacher observation and the absence of reported hostility and aggressive behaviors. I interpreted this improvement in attitude to his feeling of success at school. Almost daily, I recorded comments by him about his growing bank of words he "knew." I also observed his teacher lavishing praise on him daily for his accomplishments, and positive comments accompanied every piece of work brought home. At this point -- early in the school year -- there were still no reading or writing attempts outside of school.

Although Michael was, relatively speaking, succeeding at school tasks, he was still exhibiting behaviors indicating anxiety and lack of confidence. He was by this time in private therapy sessions for this anxiety. At one point, his teacher referred him to the speech therapist because of what she termed his difficulty in "getting his words out" when called on in class. The speech therapist administered The Illinois Test of Psycholinguistic Abilities (ITPA) which I discuss later.

After a month and a half of school, I came to the tentative conclusion that Michael, because of his continuing poor self-image as a learner and his anxiety and fear of failure, would feel more confident if he were quickly and directly taught some of the basic sound/symbol correspondences. I had no illusions that this alone would result in his learning to read, but at school he was being asked to "read" or "decode" by predicting words from their beginning and ending letters. Michael found this difficult to do with 100 percent accuracy (which he seemed

to still demand), and I was concerned that his frustration would further block his progress. I also had the psychologist's concern over his poor showing on the coding subtest of the WISC-R in mind. So I chose an explicitly phonetic approach--Lippincott (1981) -- which teaches vowel sounds first and worked with him for several months about two times a week at home. I was curious if he could learn to "code" if explicitly taught. He exhibited no difficulty with the beginning Lippincott program, quickly learned each sound/symbol correspondence, and exhibited an easy ability to apply this knowledge to "sounding out" regularly-patterned words. I recorded no instances where difficulties occurred which could be explained by the presence of underlying neurological deficits. I dropped this extra instruction around early December as soon as he appeared to feel more at ease and confident with his own reading. We had completed Book A of the series.

All of the school work brought home by Michael was initiated by the teacher. There is no evidence of writing attempts initiated by Michael until late November. One day during free time in after-school child care, Michael produced a page of patterns (see Figure 1). This was the first such production I had ever seen, either in or out of school. It is similar to the patterned drawing/writing documented by Clay (1975) of usually much younger emergent writers. More attempts seeming to explore the symbolic nature of marks on paper followed shortly after this.

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Insert Figure 1 About Here

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During December, Michael began talking about print for the first time outside of school and asking questions about it. One typical example took place on a Sunday on the way to church. Michael sat in the back seat of the car looking through The Cat in the Hat by Dr. Suess (1958).

"Is g sometimes a silent letter," he asked.

"Well," I said, thinking of the word straight, "someti--"

"Like i-n-g -- ing," he added.

"Yes, I guess so," I ventured, accepting his interpretation of a silent letter.

"i-n-g spells 'ing'," Michael went on. "See -- here-- 'thing'." He pointed to the picture of a creature called "Thing 1" where the word Thing is printed on the character as a label.

His question about silent letters could very well have been an attempt to use what he had learned through explicit instruction in school in connection with what he already knew-- he was familiar with The Cat in the Hat book. Later that morning, though, he demonstrated through his talk that he was trying to figure out an aspect of written language which is not explicitly taught: the use of white space to signal word boundaries. Michael studied a large sign on the inside wall of the church for a few minutes. Then he turned to me and asked, "What does b-r-i-n-g spell?"

"Bring," I said.

"But look." He pointed to the sign. It had the words "Bring Food" boxed separately and repeated (see Figure 2). "Food. Bring," he said. "What does bring mean?"

"You know," I said. "Bring something. Like you brought food last Sunday."

"Oh -- 'bring food!' It doesn't look like bring goes with food there. Look -- Bring. Food. Bring food."

"I know; it looks separate," I said as I realized what he had been grappling with. "They have boxes around each word."

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Insert Figure 2 About Here  
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This is a nice example, I think, of Michael putting together what he has been taught -- silent letters, ing, thing, bring-- with the inferences he has had to make about the nature of written language -- in this case, conventions of presenting written language -- as he constructs his knowledge about reading and writing in his own life.

The fact that the instruction Michael was receiving in school could not sufficiently account for all of the concepts needed to learn to read and write was underscored later in December when Michael said to his sister and me at the breakfast table, "Our French teacher doesn't teach us words."

"She doesn't teach you words?" I responded. "What does she teach you?"

"Numbers -- and colors." It took me a second to realize that Michael meant the French words for numbers and colors.

What is a word? By this time Michael had progressed to the first-grade reader at school where more and more of the instruction was focusing on comprehension. Certainly, his teacher was making the assumption that Michael shared the same concept of "word" as she did. It is on his own, though, outside of school instruction, that he is coming to terms with the concept. He continued to do this throughout the year -- dealing with "metalinguistic" concepts outside of school -- often through questions and discussions with me.

Although Michael apparently was reading from the basal reader in school, there is no overt evidence up to the halfway point in the school year that he felt competent to read self-chosen materials. He continued to enjoy being read to. He would check a book out of the school library each week as required, but then would ask me to read it to him. His reading attempts seemed to be limited to figuring out certain environmental print like the sign on the church wall.

From March until May, however, the data point to a period of concentrated effort on Michael's part and to progress in learning to read and write on several fronts. One could still see the effect of the school-based activities in keeping Michael focused on print and Michael's increasing store of information and positive self-image providing support for his continuing self-construction of knowledge.

Comparing the nature of the writing and reading both in school and out of school during this time period, it was clear that they differed. Michael was clearly doing different kinds of reading and writing in school than out (Reading and writing are defined here as the processing or production of written, connected text and does not include the few months of direct phonics instruction at home). For example, by this time, Michael had moved to the second first-grade reader. He was reading unfamiliar text written in slightly "strange" beginning basalese. When his group would finish one story they would move on to the next in the reader. The focus was on constantly progressing to new material. Michael understood this and enjoyed marking his progress from story to story and from book to book. He would have been appalled to ever go back in his reader. At home, though, Michael at this point never wanted to read unfamiliar--new -- text. Although new books appeared constantly from the library and the store, he never volunteered to read from them or agreed to read from them if I asked him. The only reading attempts documented are when he would join in as I read a familiar -- many-times-heard -- story. He began volunteering to read from the nearly-memorized Green Eggs and Ham (Dr. Seuss, 1960). During this time period -- from March to May -- his reading attempts of text out of school moved from familiar patterned text -- like Dr. Suess books -- to the familiar to the slightly less familiar. Thus one can see Michael accepting the ground rules for reading at school -- always pushing ahead to new

material -- while outside of school focusing on material he has heard read over and over again.

Michael, from March to May, was doing more and more writing at school. These writing events were always initiated by the teacher and reflected a focus on different skills. Some of these activities focused on narrow skills such as adding -s to words or creating contractions in teacher-constructed sentences. Most of the writing I encountered from school, though, were short, created stories -- the assignment usually being to write a story using certain words or beginning with a particular sentence. Many of these centered around holiday themes. These were returned by the teacher with misspellings underlined, punctuation corrected, and a comment on the meaning and intent of the stories. Figure 3 contains a typical example of these "stories."

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Insert Figure 3 About Here

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Out of school, Michael did very little self-initiated writing. What he did do consisted mainly of print as part of pictures -- created-environmental print as it were. For example, note the print on the picture reproduced in Figure 4 which was apparently inspired by the observation of Dental Health Week at school. I documented only one instance during this time period

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Insert Figure 4 About Here

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where he used print out of the context of a picture. One evening I found, under the dog's dish, some small pieces of paper enclosed in a larger one. The directions, Take One Laura, were printed on the outside. Inside were five paper money bills which he had drawn and labelled.

Thus Michael at this time was moving very slowly to incorporating writing into his daily activities outside of school. Although if you looked only at his school work, you would say that he was doing quite a bit of writing, his self-initiated writing attempts were few.

This disparity was reflected in his produced "invented spellings," collected because of the theoretical inference that the activity of creating spellings enable children to sort out the print/speech match. A list of all of his invented spellings -- defined as any word spelled in an unconventional way-- revealed the disparity between the amount of invented spellings produced at school and those produced at home. From the school papers, which were all teacher-initiated, I noted 44 invented spellings. From the self-initiated writing done out of school, I noted only 5 invented spellings. Table 1 contrasts the two lists.

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Insert Table 1 About Here

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By the end of the school year, Michael had been moved to a higher reading group and continued to progress. During the

summer, he moved to reading new texts as he took part in the local library's summer reading game. He considered himself a reader by the beginning of second-grade -- evidenced through his voluntary reading and comments about his ability to read.

## DISCUSSION

### LD Variables and Learning to Read

The results of this case study suggest that the variables tested by the commonly-used tests in the field of learning disabilities fail to account adequately for written language acquisition processes. The relationship between diagnosed processing deficits and literacy acquisition could not be found in this detailed examination of one child learning to read and write. For example, although Michael scored quite low on the coding subtest of the WISC-R, he evidenced no difficulty with learning and using the sound/symbol correspondences as taught by (a) the Houghton-Mifflin basal reading series (1983) and (b) the Lippincott reading program (1981). Further, although Michael's performance on the Bender indicated errors in perception and reproduction of shapes, neither his reading nor writing attempts during this year reflected any problems in this area.

Michael's test profile on these variables not only failed to predict his beginning reading success, it also failed to accurately predict his success as he progressed through school. He scored more than two grades above grade level in reading on the Comprehensive Test of Basic Skills at the end of first grade.

During his third grade year, he was admitted to the gifted program based on achievement scores in the 96-99 percentiles for two straight years. At the close of fourth grade, the Stanford Achievement Test placed his reading grade level at 8.0.

After carefully studying the tests administered to Michael and analyzing Michael's literacy-learning process and progress, I feel I can put forth the following speculations about the failure of these tests to accurately predict Michael's success at learning to read without special intervention geared to remediating specific neurological deficits.

First of all, the tests or subtests which detected problems were tests of essentially non-language abilities. Although orientation in space, spatial memory, spatial planning, visual-motor coordination and dexterity are all involved in reading and writing, they are sub-activities which serve the main activity of language processing or production. Michael's language ability or knowledge was tapped only a few times by these various tests. Recall that his verbal IQ score was above average. Also, Michael scored above average on the few subtests on the ITPA which can be considered true language assessors. One such subtest was the grammatic closure test on which Michael scored 3 standard deviations above the mean. This, however, was considered an anomaly by the speech therapist who administered the test, despite the fact that research has shown the grammatic closure test to be the only subtest of the ITPA to be significantly correlated with reading achievement (Newcomer & Hammill, 1975).

The answer to the anomaly presented by these test results and Michael's actual performance lies, I believe, in looking at what the tests do and do not tap. What these tests did tap, I believe, was Michael's lack of experience with manipulatives and with print. Recall that Michael chose (for various reasons) not to engage in such activities as puzzles, legos, drawing, writing and reading attempts -- all activities which involve attention to details and patterns as well as visual-motor coordination and dexterity. This is a good example, I think, of the point Harste, et al. (1984) make in their book, Language Stories and Literacy Lessons, where they state that age (on which all of these tests are normed) is a dangerous criterion precisely because it does not consistently covary with the operational factor of experience.

Variables not tapped by these tests are those associated with the extent of the experience with written language possessed by the child. Experience with the functions and forms of written language prior to formal schooling is increasingly being considered as basic to success at learning to read and write (Harste, et al., 1984).

Michael was a child whose experiential store included many experiences with the structures of written language (through being read to) and with the functions of written language. This child did not, however, have much experience with the details of written language -- the "innerworking of print" -- or with other activities which call for attention to details and patterns. It

was this lack of experience, I suggest, that was manifested in the low scores on the performance half of the WISC-R and on the Bender. Thus, it was not a matter of specific processing deficits interfering with the learning to read process but rather test results indicating deficits in skills which result from particular experiences. The documented auditory processing deficit did not affect the learning-to-read process, only the learning environment required.

I speculate that many of these tests have decent records as predictors of success because exposure to written language usually covaries with experience with manipulatives and early writing/reading activities. Children from homes where they are surrounded with print in many different forms and functions are also usually provided with puzzles, legos, paper and pencils, and usually take advantage of them.

When Michael was forced to attend to the innerworkings of written language through school-structured activities, he quickly made up for this lack of experience. Because he possessed the language strengths gained through his exposure to written language in the home, he could progress quite rapidly in learning to read and write.

#### Role of School Instruction

For Michael, school instruction played a vital, though not total, role in his learning to read and write. A part of that role was forcing him to attend to the "innerworkings" of written language, an activity he had avoided in his preschool years.

This conclusion is especially supported by the data on the number of occurrences of invented spellings. Read (1971) and Bissex (1980) -- among others -- have shown that children, before encountering instruction, possess a highly abstract knowledge of phonology which is systematic and uniform across children and which differs in specific ways from that of adults. They apply this knowledge to their spellings which are known as invented spellings.

Many researchers in the field of emergent literacy believe that it is through writing that children come to understand the many facets of written language. Dyson (1982) claims that it is the activity of writing which provides the opportunity to solve the "written language puzzle." It is apparently through such activities as creating their own spellings that children begin to sort out the match between speech and print. Because the activities required of him in his first-grade classroom forced him into inventing spellings, Michael was provided the opportunity to explore the print/speech match.

Although the formal instruction in literacy focused Michael on print and provided him with opportunities to explore the print/speech match, Michael learned to read and write successfully through an interaction between school learning/direct instruction and self-construction of knowledge outside of the narrow instructional curriculum. The ways in which Michael learned in these two venues are interesting in their relationship and in their differences.

The relationship between in-school learning and outside- of-school construction of knowledge is best characterized as the school instruction directing Michael toward print which he grapples with on his own through very different activities outside of school. For example, throughout much of the year, Michael was using written language in school in various decontextualized ways while at the same time at home he was mainly employing print in contextualized settings. Decontextualized is defined here as language removed from a shared physical context and recontextualized into a solely linguistic context. Although Michael was moving toward decontextualization of print (e.g. the Take One Laura) at home, it was certainly not to the degree to which he was expected to do in school. He did not begin experimenting with print at home, though until he was led into it at school. The different types of reading materials used at school and at home and the focus on metalinguistic concepts at home and not at school (see Results section) are further exemplars of this conclusion.

#### Role of Parent Teaching/Coaching

A final, minor, theme to emerge from this case study is the role of parental support in the school success of their children. In carefully documenting all that Michael did related to learning to read and write, the brief period of direct phonic instruction by me was noted. School instructional programs can never meet every child's needs at the appropriate moments. Many parents do as I did and try to "fill in the gaps" at home. However, not all

parents are able to do this. I could be that this type of parental teaching/coaching/supporting is a significant factor in the achievement level in middle-class/professional class schools.\*

#### Suggestions for Research and Practice

Although we cannot generalize from this one child to a larger group, several suggestions for further research and practice do arise from the study. First of all, we need to rethink our interpretations of test data on young children. As researchers and practitioners, we need to develop assessment tools which provide more comprehensive pictures of children including their experiences with the different aspects of written language during their preinstruction years.

Further, research needs to look at the relationship between experience and neurological functioning in terms of literacy acquisition. As long as researchers from the neurological deficit school of learning disabilities and researchers from the emergent literacy field fail to communicate with each other, we will fail to proceed toward a more true understanding of the seeming inabilities of some children to learn to read and write.

Further, we need to remember that reading and writing are language processes when planning activities for identified "children at risk." Many activities provided for children in classes for learning disabled or as part of special tutorial sessions focus on the non-language abilities identified as lacking by the tests. Thus, one will find activities aimed at

increasing visual-motor coordination, spatial memory, auditory memory, or memorizing and copying paired symbols, for example. Michael's experiences suggest that literacy acquisition is enhanced by the availability of print and print-related items such as paper and pencil and opportunities for reading and writing attempts both at home and at school.

In addition to the above, another avenue for further research is suggested by this study. The debate over which beginning reading curriculum is best often fails to take into account a factor highlighted in this report: the self-construction of essential knowledge about written language by children outside of school while they are engaging in direct, formal literacy instruction. More developmental research into the learning-to-read process of children from a broader perspective than merely school instruction would begin to give us insights into effective beginning reading instruction as well as into literacy learning as a whole. The data from this study suggest that we are only beginning to understand the total picture of how children learn to read and write.

#### References

- Ayers, A.J. (1968). Reading -- a product of sensory integrative process. In H.K. Smith (Ed.), Perception and reading, pp. 77-82. Newark, DL: International Reading Association.
- Baker, H.J. & Leland, B. (1935). Detroit tests of learning aptitude. Indianapolis: Bobbs, Merrill.
- Bender, L. (1938). Visual motor gestalt test and its clinical uses. Research monograph no. 3. New York: American Orthopsychiatric Association.
- Benton, A.L. The revised Benton visual retention test. New York: Psychological Corporation.
- Bissex, G.L. (1980). GNYS AT WRK: A child learns to write and read. Cambridge, MA: Harvard University Press.
- Chall, J.S. (1967). Learning to read: The great debate. New York: McGraw-Hill.
- Clay, M.M. (1975). What did I write? Auckland, New Zealand: Heinemann Educational Books.
- Coles, G.S. (1978). The learning-disabilities battery: Empirical and social issues. Harvard Educational Review, 3, 313-340.
- Dr. Seuss (1958). The cat in the hat. New York: Beginner Books.
- Dr. Seuss (1960). Green eggs and ham. New York: Beginner Books.
- Dyson, A.H. (1982). Reading, writing, and language: Young children solving the written language puzzle. Language Arts, 59 (8), 204-214.
- Dyson, A.H. (1984). Learning to write/learning to do school: Emergent writers' interpretations of school literacy tasks. Research in the Teaching of English, 18 (3), 233-264.

Ferriero, E. & Teberosky, A. (1982). Literacy before schooling. Exeter, NH: Heinemann Educational Books.

Frostig, M. (1964). The Marianne Frostig developmental test of visual perception. Palo Alto, CA: Consulting Psychologists Press.

Frostig, M. & Maslow, P. (1969). Reading, developmental abilities, and the problem of match. Journal of Learning Disabilities, 2, 571-578.

Fry, E. (1987). Statement made to participants at Special Session: Report Card on the Basals. National Conference of Teachers of English Annual Convention; Los Angeles.

Goodman, K. (1972). Reading: The key is in the children's language. The Reading Teacher, 505-508.

Goodman, K. (1986). What's whole in whole language. Portsmouth, NH: Heinemann Educational Books.

Harste, J., Burke, C., & Woodward, V. (1984). Language stories & literacy lessons. Portsmouth, NH: Heinemann Educational Books.

Holdaway, D. (1979). The foundations of literacy. Auckland, New Zealand: Heinemann Educational Books.

Houghton Mifflin Reading Program (1983). Boston, MA: Houghton Mifflin Company.

Kaufman, A. & Reynolds, C. (1985). Intellectual and academic achievement tests. In T.H. Ollendick & M. Hersen (Eds.), Child Behavioral Assessment. New York: Pergamon Press.

Kephart, N.C. (1964). Perceptual-motor aspects of learning

disabilities. Exceptional Children, 31, 201-206.

Kirk, S., McCarthy, J., & Kirk, W. (1968). Illinois test of psycholinguistic abilities, rev. ed. Urbana, IL: University of Illinois Press.

Lippincott Basic Reading. (1981). New York: Harper & Row.

Mikulich, D. (1984). Audiological evaluation: Central auditory battery. Evaluation report on file and available from author. Oakland, CA: Children's Hospital of Northern California.

Newcomer, P.L. & Hammill, D.D. (1975). ITPA and academic achievement: A survey. Reading Teacher, 28, 731-741.

Position Paper of the National Joint Committee on Learning Disabilities, Feb. 11, 1986). Learning disabilities and the preschool child. Learning Disability Quarterly, 9, 158-163.

Purcell-Gates, V. (1986). Three levels of understanding about written language acquired by young children prior to formal instruction. In J. Niles & R.V. Lalik (Eds.), Solving problems in literacy: Learners, teachers, and researchers. Thirty-fifth Yearbook of The National Reading Conference. Rochester, NY: National Reading Conference.

Read, C. (1971, Feb.). Pre-school children's knowledge of English phonology. Harvard Educational Review, 41 (1), 1-34.

Roswell, F. & Chall, J. (1963). Roswell-Chall auditory blending test. New York: Essay Press.

Sulzby, E. (1983a). Children's emergent abilities to read favorite storybooks. A Final Report to Spencer Foundation.

- Sulzby, E. (1983b). Children's development of prosodic distinctions in telling and dictating modes. Draft of paper to appear in A. Matsushashi (Ed.), Writing in real time: Modelling production processes. New York: Longman.
- Smith, F. (1979). Reading without nonsense. New York: Teachers College Press.
- Teale, W. & Sulzby, E. (Eds.). (1986). Emergent literacy: Writing and reading. Norwood, NJ: Ablex.
- Ysseldyke, J.E., Algozzine, B., Richey, L. & Graden, J. (1982). Declaring students eligible for learning disability services: Why bother with the data? Learning Disabilities Quarterly, 5, 37-44.

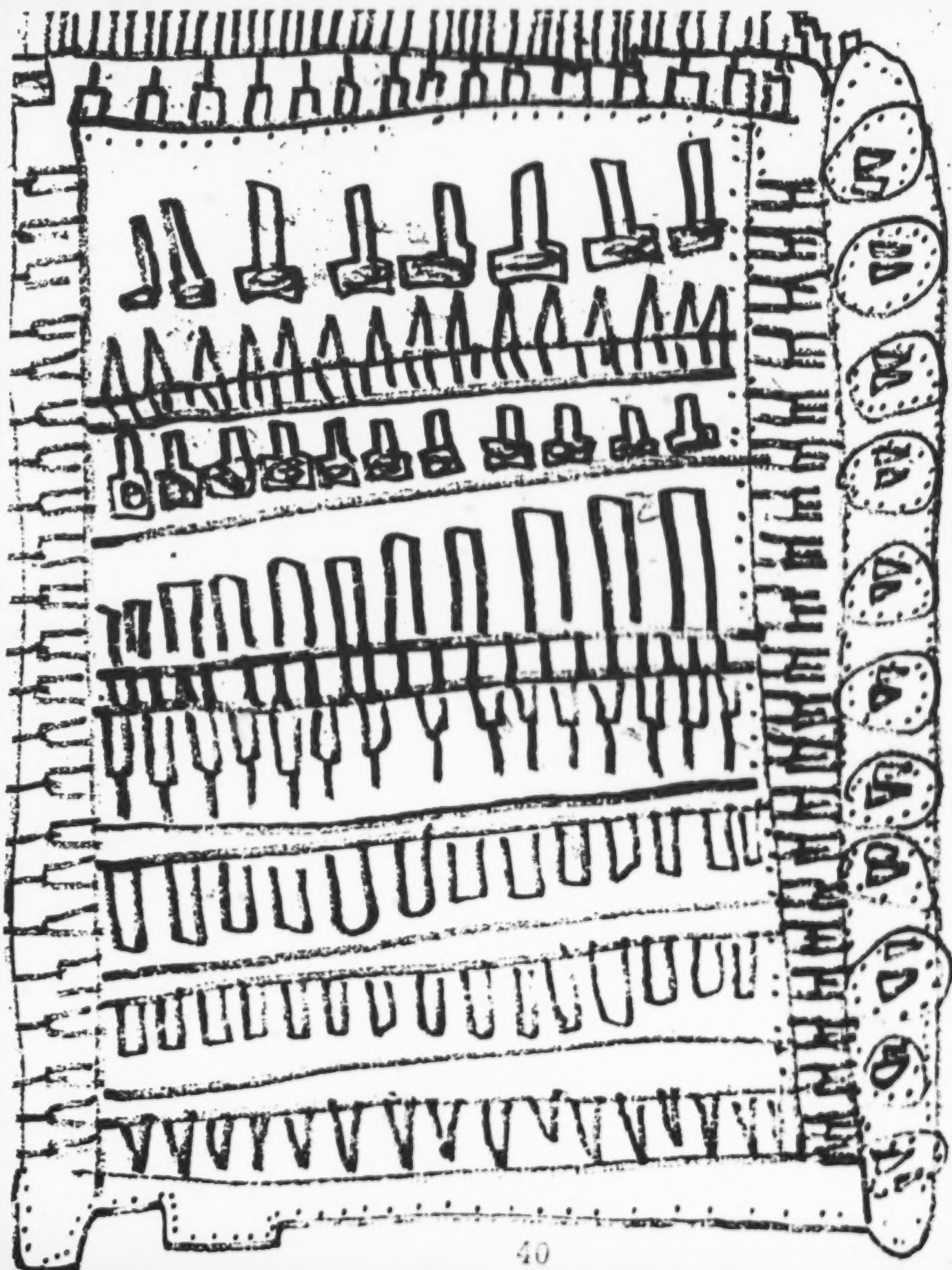
Table 1  
Invented Spellings Produced at Home and at School

| School |         |           | Home |         |           |
|--------|---------|-----------|------|---------|-----------|
| 10/23  | pach    | (patch)   | 3/18 | qyute   | (cute)    |
|        | dreke   | (drink)   | 3/29 | touth   | (tooth)   |
|        | blod    | (blood)   |      | past    | (paste)   |
|        | nowun   | (no one)  |      | casl    | (castle)  |
|        | stase   | (stase)   | 5/22 | sun Kes | (Sunkist) |
|        | hose    | (house)   |      |         |           |
| 12/13  | shfvr   | (shiver)  |      |         |           |
| 3/28   | bukus   | (because) |      |         |           |
|        | mailbox | (mailbox) |      |         |           |
|        | wom     | (warm)    |      |         |           |
|        | her     | (here)    |      |         |           |
| 3/30   | seret   | (secret)  |      |         |           |
|        | Sieed   | (Saeed)   |      |         |           |
|        | thies   | (things)  |      |         |           |
| 4/2    | lepe    | (leap)    |      |         |           |
|        | eris    | (ears)    |      |         |           |
|        | rore    | (roar)    |      |         |           |
|        | touched | (touched) |      |         |           |
| 4/5    | iglow   | (igloo)   |      |         |           |
|        | bron    | (brown)   |      |         |           |
| 4/9    | appel   | (apple)   |      |         |           |
|        | Ester   | (Easter)  |      |         |           |
| 4/13   | pael    | (pail)    |      |         |           |
| 4/23   | wus     | (was)     |      |         |           |
| 5/1    | thir    | (there)   |      |         |           |
|        | dragein | (dragon)  |      |         |           |
|        | beces   | (because) |      |         |           |
|        | tride   | (tried)   |      |         |           |
| 5/23   | their   | (there)   |      |         |           |
|        | hateed  | (hated)   |      |         |           |

(Table continues)

Table 1 (cont.)

|      | School               | Home |
|------|----------------------|------|
|      | deseided (decided)   |      |
|      | hav (have)           |      |
|      | worer (warrior)      |      |
| 6/5  | rome (room)          |      |
|      | lrde (learned)       |      |
|      | buisichle (bicyle)   |      |
| 6/12 | moster (monster)     |      |
|      | tride (tried)        |      |
|      | kil (kill)           |      |
|      | prsin (person)       |      |
|      | trid (tried)         |      |
|      | thay (they)          |      |
|      | kilded (killed)      |      |
|      | echther (each other) |      |



LD Tests and Learning to Read

Figure 1. First documented attempt at patterned drawing/writing by Michael.

Bring

Food

~~~~~  
~~~~~  
Pictures  
~~~~~  
~~~~~

Bring

Food

Figure 2. Sign on church wall which Michael attempted to read, grappling with the boxes around the words as unconventional word boundaries.

10/23/84 (9)

Hi! my name is Scary

I Live in a pumpkin

pach! I Love having

a pumpkin head!



I dreke blod.

Nowun stasealive

in my houe.

LD Tests and Learning to Read

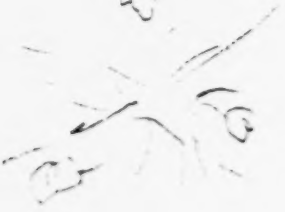
Figure 3. Michael's response to a typical school writing assignment.

18/5/81

tooth

10

g



10

g

tooth / past



10

g

LD Tests and Learning to Read

Figure 4. Example of Michael's working print into drawings in a writing/  
drawing produced at home.